



No. 54 SG POLYMER CONCRETE - STRUCTURAL GRADE

PHYSICAL PROPERTIES

Application time	
Working time at 70°F	40 minutes
Initial set at 70°F	5 hours
Coefficient of thermal expansion, 73° to 500°F (23° to 260°C)	5.6×10^{-6} in/in/°F (10.1×10^{-6} cm/cm/°C)
Compressive strength (ASTM C-579)	
24 hours	2,000 psi (140.6 kg/cm ²)
7 days	3,500 psi (246.1 kg/cm ²)
28 days	4,300 psi (302.21 kg/cm ²)
Density (ASTM C-905)	144 pcf (2.306 gm/cm ³)
Flexural strength (ASTM C-580)	1,000 psi (70.3 kg/cm ²)
Maximum service temperature	1400°F (760°C)
Mix ratio (Powder to Liquid, by Weight)	6.5 to 1
Modulus of elasticity (ASTM C-580)	1.97×10^6 psi (1.4×10^5 kg/cm ²)
Moisture absorption (ASTM C-413)	2.97%
Shrinkage (ASTM C-531)	0.2%
Slump	8 inches
Tensile strength (ASTM C-307)	550 psi (38.7 /cm ²)
Thermal Conductivity (ASTM C1113) - Hot Wire Method (65°F to 1,500°F: 18°C to 817°C)	19.6 - 14.4 Btu-in/hr-ft ² -°F (2.83 - 2.07 W/m-°C)

Physical properties were determined on specimens prepared under laboratory conditions using applicable ASTM procedures. Actual field conditions may vary and yield different results; therefore, data are subject to reasonable deviation.

Sauereisen Acidproof Concrete No. 54 SG - Structural Grade is a potassium silicate castable polymer concrete refractory for chemical resistant construction of sumps, dikes, containment pads, trenches, walls and other structural support columns or bases. Since No. 54 SG is fast-setting and strong, it eliminates the requirement for a Portland cement foundation in new construction and maintenance applications.

The No. 54 SG-Polymer Concrete - Structural Grade material has been specifically formulated to resemble the physical characteristics of Portland cement and should be installed with proper reinforcement, mixing, forming and casting methods. After its cure, No. 54 SG provides outstanding performance as a chemical resistant liner for the most severe acidic environments.

CHARACTERISTICS

- Resistant to most solvents, oils, acids and acid salts (except hydrofluoric) over a pH range of 0.0 to 7.0
- Maximum service temperature of 1400°F (760°C).
- Potassium silicate bonded Polymer Concrete
- Fast chemical set - less down time.

AREA PREPARATION

Temperature of Working Area

Maintain a temperature of 50°-90°F on air, substrate, Liquid, and Powder components during mixing, application, and cure. The monolithic components and substrate should be maintained at 65°F to 85°F for 48 hours prior to beginning work.

At temperatures below 50°F, the application becomes more difficult and curing is retarded.

Above 90°F, the material working time decreases. It is recommended that the material components be stored in a cooler area prior to mixing.

Shading the substrate and using ice water to cool mixing equipment is not uncommon. In extreme temperatures it may be necessary to postpone the application or apply during cooler hours.

Reinforcement

When applying No. 54 SG - Structural Grade, appropriate reinforcement similar to that used with Portland cement must be incorporated. In severely aggressive environments, corrosion resistant reinforcement should be used. Consult Sauereisen for recommendations.

Surface Preparation

Where operating parameters and substrate conditions permit, No. 54 SG - Structural Grade should be applied in conjunction with an appropriate chemical resistant membrane. Consult Sauereisen for specific membrane recommendation.

Foundation Construction - The foundation base should be constructed with appropriate materials to support load of the engineered design. No. 54 SG must not be applied over standing water or loose soil. When No. 54 SG is poured as a slab at grade elevation, consideration should be given for placement of a water stop material in expansion joint design.

Concrete - Refer to SSPC-SP13/NACE 6 "Surface Preparation of Concrete" for detailed guidelines.

Surfaces should be made free of oil, grease, water and other contaminants that may inhibit bond. This can be achieved by chemical cleaning.

New Concrete - Abrasive blast, high-pressure water blast, or acid etch concrete to remove laitance and obtain uniform surface texture.

Old Concrete - Concrete must be dry, firm and structurally sound as specified by the architect/engineer. All structural cracks must be repaired. Abrasive blast, high-pressure water blast, or acid etch concrete to remove laitance and obtain uniform sound substrate.

Brick - Remove oil, grease, water, and other contaminants that may inhibit bond. Abrasive blast or hydroblast mortar joints to a depth of 1/2 inch to remove all loose material and provide a clean, firm surface.

If chemical cleaning is utilized to remove contaminants, substrate must be neutralized. If abrasive or high-pressure water blasting is used as the method of surface preparation, all sand and/or debris must be removed by thoroughly vacuuming the area with an industrial vacuum cleaner. If surface does not have desired conditions, repeat surface preparation procedure.

EXPANSION/CONTROL JOINTS

Joints are to be provided on 14 foot centerlines around all fixed objects, peripheries of rooms and over all points of movement in the base slab. The joint should then be filled with the appropriate expansion joint filler. Consult Sauereisen for recommendation.

APPLICATION

Mixing

Mixing should be done mechanically with a slow speed mortar mixer. The mixing equipment must be clean and free of Portland cement or other contaminants. The size of the batch will be governed by

the area to be covered, the number of workers applying the material, and the speed with which it can be placed.

Mixing No. 54 SG at 6.5 parts Powder to 1 part Liquid by weight will produce a slump of approximately eight inches. Weigh a convenient amount of No. 54 SG Powder into a container and the appropriate amount of No. 54 SG Liquid in to a second container. Mark the levels in each container so that succeeding measurements can be made by volume, thus eliminating the necessity of weigh each batch.

Pour the entire amount of Liquid into the mixer and add the Powder slowly, mixing continuously to avoid entrapped air. Mix slowly and thoroughly for at least five minutes until cement is a uniform consistency. Do not add sand, gravel, Portland cement or other additives to No. 54 SG. Remove entire batch from the mixer when mixing is completed to prevent build-up in the equipment. While pouring one batch, another should be mixed in order to eliminate delays and permit continuous operation.

A continuous mixer can be used for an alternative method of mixing. This is advisable for installations requiring the quickest placement of material over a large area. Consult Sauereisen for details.

Installation

When casting No. 54 SG, forms should be constructed of firmly braced wood or metal, which has been given a light coating of release agent. The release agent will prevent No. 54 SG from adhering to the screeds or forms, but should not leave a residue on the freshly cast material.

The forms are to be completely sealed and rendered watertight with heavy consistency pliable caulking. Seal forms placed over horizontal rough surfaces. Do not apply over any standing water.

All form and screed systems should be strong enough to retain No. 54 SG in place without deformation. Tamping methods or pencil vibration are suitable for distributing the material. Use a trowel or screed board to level the polymer concrete flush with the top of the form. If necessary, trowel finish within 15 minutes after mixing.

Cold joints require a liberal priming with No. 54 SG Liquid at the termination of previously placed material.

Do not impose loads until final set has been achieved. Lower temperatures will require longer cure periods before removing forms.

COVERAGE

Quantities* required per square foot.

<u>Thickness</u>	<u>Amount</u>
2 inches (minimum)	24 pounds
Each additional inch	12 pounds

*Quantities do not include losses during application or normal density variations.

SETTING/CURING

The No.54 SG-Polymer Concrete Structural Grade will take an initial set in five hours at 70°F. Proper curing of No. 54 SG is critical to the serviceability of the completed structure; therefore the substrate and the material temperatures should not be allowed to fall below 50°F until final cure has been achieved. Do not allow water or chemicals on the material surface for a minimum of 48 hours. For temperatures below 70°F, cure a minimum of 72 hours prior to water or chemical exposure.

PACKAGING

Powder: 55 lb. moisture resistant bags on plastic wrapped pallets; 2,250 lb. bulk bags.

Liquid: 50 lb. pails; 600 lb. drums.

CLEAN-UP

All equipment should be cleaned by scrubbing with a stiff brush and water at the end of each working period or when build-up becomes pronounced.

SHELF LIFE

Sauereisen No. 54 SG- Polymer Concrete - Structural Grade Powder has a shelf life of one (1) year from date of manufacturer. No. 54 SG Liquid has a shelf life of one (1) year, from date of manufacturer, when stored in unopened, tightly sealed containers in a dry location at 70°F. Avoid freezing. If there is a doubt as to the quality of the materials,

CAUTION

Consult Material Safety Data Sheets and container label Caution Statements for hazards in handling these materials.

WARRANTY

We warrant that our goods will conform to the description contained in the order, and that we have good title to all goods sold. WE GIVE NO WARRANTY, WHETHER OF MERCHANTABILITY, FITNESS FOR PURPOSE OR OTHERWISE, EXPRESS OR IMPLIED, OTHER THAN AS EXPRESSLY SET FORTH HEREIN. We are glad to offer suggestions or to refer you to customers using Sauereisen cements and compounds for a similar application. Users shall determine the suitability of the product for intended application before using, and users assume all risk and liability whatsoever in connection therewith regardless of any suggestions as to application or construction. In no event shall we be liable hereunder or otherwise for incidental or consequential damages. Our liability and your exclusive remedy hereunder or otherwise, in law or in equity, shall be expressly limited to our replacement of nonconforming goods at our factory or, at our sole option, to repayment of the purchase price of nonconforming goods.

- Distributors and agents in major cities throughout the world. Consult manufacturer for locations.**
- Information concerning government safety regulations available upon request.**
- Sauereisen also produces inorganic compounds for assembling, sealing, electrically insulating and grouting.**

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